OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

Utilization of Data by the Chief Information Officer and Executive Vice President

Audit Report

Report Number
IT-AR-15-003

March 2, 2015

OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

Highlights

The CIO's data practices demonstrate effective use of internal and external business data.

Utilization of Data by the Chief Information Officer and Executive Vice President
Report Number IT-AR-15-003

Background

The U.S. Postal Service Office of Inspector General initiated an agency-wide series of audits to review the U.S. Postal Service's use of data. These audits included discussions and analyses of data the deputy postmaster general and executive vice presidents use.

The Postal Service depends on data to manage its business strategies and daily activities. With effective and efficient access to appropriate internal and external data, Postal Service management can make more informed business decisions.

This audit report, one in a series, focuses on the use of data by the chief information officer and executive vice president (CIO). The CIO oversees the Postal Service's information infrastructure to ensure data is available and accessible to senior management to drive business and customer value. The CIO's effective use of data analytics is important in mitigating the risk that data is not available when needed. Having reliable access to data helps senior management achieve the Postal Service's goals.

Our objective was to determine whether the CIO effectively uses internal and external business data to manage business activities and mitigate risks.

What The OIG Found

The CIO's data practices demonstrate effective use of internal and external business data; however, opportunities exist for the CIO to better utilize data for the purposes of business activity management and risk mitigation.

We found the CIO relies on a voluminous amount of granular metrics in the form of graphs, tables, scorecards, reports, and email correspondence. For example, the weekly reports on service performance for each class of mail contain about 800 individual metrics. Additionally, the CIO receives daily reports on information technology performance including security events such as malware and incident information.

The CIO does not have an aggregated dashboard view of composite metrics representing the strategic priorities and risks across his areas of responsibility. This dashboard could reflect the following best practice metric categories: financial, project, operational, talent management, user satisfaction, and information security.

By using an aggregate-type dashboard, the CIO could improve focus on sustaining the Postal Service's information infrastructure such as improving the availability of critical systems related to mail processing. Additionally, this dashboard could enhance the visibility of critical information.

What The OIG Recommended

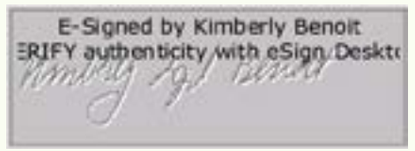
We recommended the CIO implement an aggregated dashboard view of key composite metrics that represent strategic goals, risks, anomalies, and key issues requiring management action.

Transmittal Letter

OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

March 2, 2015

MEMORANDUM FOR: JAMES P. COCHRANE
CHIEF INFORMATION OFFICER
AND EXECUTIVE VICE PRESIDENT



FROM: Kimberly F. Benoit
Deputy Assistant Inspector General
for Information Technology, Investment, and Cost

SUBJECT: Audit Report - Utilization of Data by the Chief Information Officer and Executive Vice President
(Report Number IT-AR-15-003)

This report presents the results of one of our agency-wide series of audits to review the Postal Service's use of data – in particular the Utilization of Data by the Chief Information Officer and Executive Vice President (Project Number 14WG005IT000).

We appreciate the cooperation and courtesies provided by you and your staff. If you have any questions or need additional information, please contact Aron Alexander, director, Information Technology, or me at 703-248-2100.

Attachment

cc: Corporate Audit and Response Management

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Findings

The CIO could increase business value by viewing aggregated data that is more actionable, easier to comprehend, and more visually compelling.

Introduction

The U.S. Postal Service Office of Inspector General (OIG) initiated a U.S. Postal Service-wide series of audits to review the Postal Service's use of data. These audits included discussions and analyses of data used by the deputy postmaster general and executive vice presidents. The OIG engaged the Corporate Executive Board Company (CEB)[1] to identify best practices for data use for corporate functions.

This report presents the results of our self-initiated audit of the Postal Service's Utilization of Data by the Chief Information Officer and Executive Vice President (Project Number 14WG005IT000). Our objective was to determine whether the chief information officer and executive vice president (CIO) effectively use internal and external business data to manage business activities and mitigate risks. See Appendix A for additional information about this audit.

Nearly half a million career employees support delivery of over half a billion mailpieces to 153 million addresses nationwide. That process generates vast amounts of data. One of the CIO's responsibilities is creating and maintaining the network and infrastructure that links over 31,000 facilities, 45,500 point-of-sale terminals, 310,000 hand-held scanners, and 33 petabytes[2] of storage capacity. The CIO also directs innovation in new mail intelligence,[3] engineering systems, and payment technologies.

The CIO maintains the information infrastructure leveraged by Postal Service business management to make decisions to address the Postal Service's strategic goals and operations. One of the greatest risks the CIO confronts is data that is not available when needed. Effective data use by the CIO supports the rest of senior management in their efforts to achieve the Postal Service's goals. The CIO sponsors and supports multiple Delivering Results, Innovation, Value, and Efficiency (DRIVE)[4] initiatives, including maintaining a high level of availability and reliability for key business systems, streamlining commercial mail acceptance, and providing 100 percent visibility for packages and mail.

Conclusion

The CIO's data practices demonstrate the effective use of internal and external business data to manage business activities and mitigate risks. The CIO works extensively with data to conduct internal analyses and provide business metrics to senior management. The CIO has a variety of analytic tools and initiates projects to mine data for metrics that will enable senior management to improve operations. We did not identify any instances of underused data, of data not acquired when needed, or of inappropriately restricted data.

However, our analysis of the metrics used to manage key priorities disclosed that the CIO reviews many granular metrics in a variety of formats. In contrast, industry best practices favor simplicity in the presentation of data. The CIO can obtain this level of simplicity by using a consolidated view of key performance categories and metrics, with the capability to drill down to detailed data as needed. Given the volume of data the CIO receives, he could increase business value by viewing aggregated data that is more actionable, easier to comprehend, and more visually compelling.

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1 An advisory company with membership programs for senior executives and their teams to drive corporate performance by identifying and building on the practices of companies.
2 A measure of memory or data storage capacity that is equal to 1,000,000 gigabytes. Equating a byte to 1 second, a petabyte would be about 35.7 million years.
3 New mail intelligence efforts include using business intelligence to support new initiatives to add value to the mail customer, enhance performance measurement and diagnostic systems, and use technology to enhance last-mile capabilities for parcel distribution and dynamic routing.
4 The Postal Service's portfolio of strategic initiatives and the name for the management process used for strategy development and execution.

Opportunity to Improve Data Utilization

The CIO regularly receives a voluminous amount of metrics in the form of graphs, tables, reports, email correspondence, and scorecards. The CIO's current view of data is weighed down by metric proliferation and is overly granular for the typical executive-level review. This is because there is not a concise and aggregated dashboard view of composite metrics that represent the strategic priorities and risks across the CIO's areas of responsibility. Such a view would enable the CIO to improve focus on maintaining the corporate information infrastructure. In addition, an aggregate dashboard would improve his ability to provide relevant data to senior management for diagnostic analysis and proactive decision making.

Industry best practices specify that too much data can be detrimental and impair decision making, while aggregated data is essential for senior management to make decisions. Successful dashboards focus the user's attention on a limited number of highly relevant metrics that clearly connect to key organizational priorities and are depicted in a way that is easy to comprehend and visually compelling. An aggregate view dashboard can provide this with key performance categories and metrics that inform the CIO's necessary actions and improvements.

The CIO provided our audit team with 20 files as a sample of the data regularly used to manage key priorities and risks. From these files, we identified over 200 tables, lists, charts, and graphs with about 1,270 metrics. This is a voluminous amount of data to be reviewed and used in daily decision making.

These data included detailed metrics from across the CIO's areas of responsibility, such as:

= INTERACTIVE ELEMENT

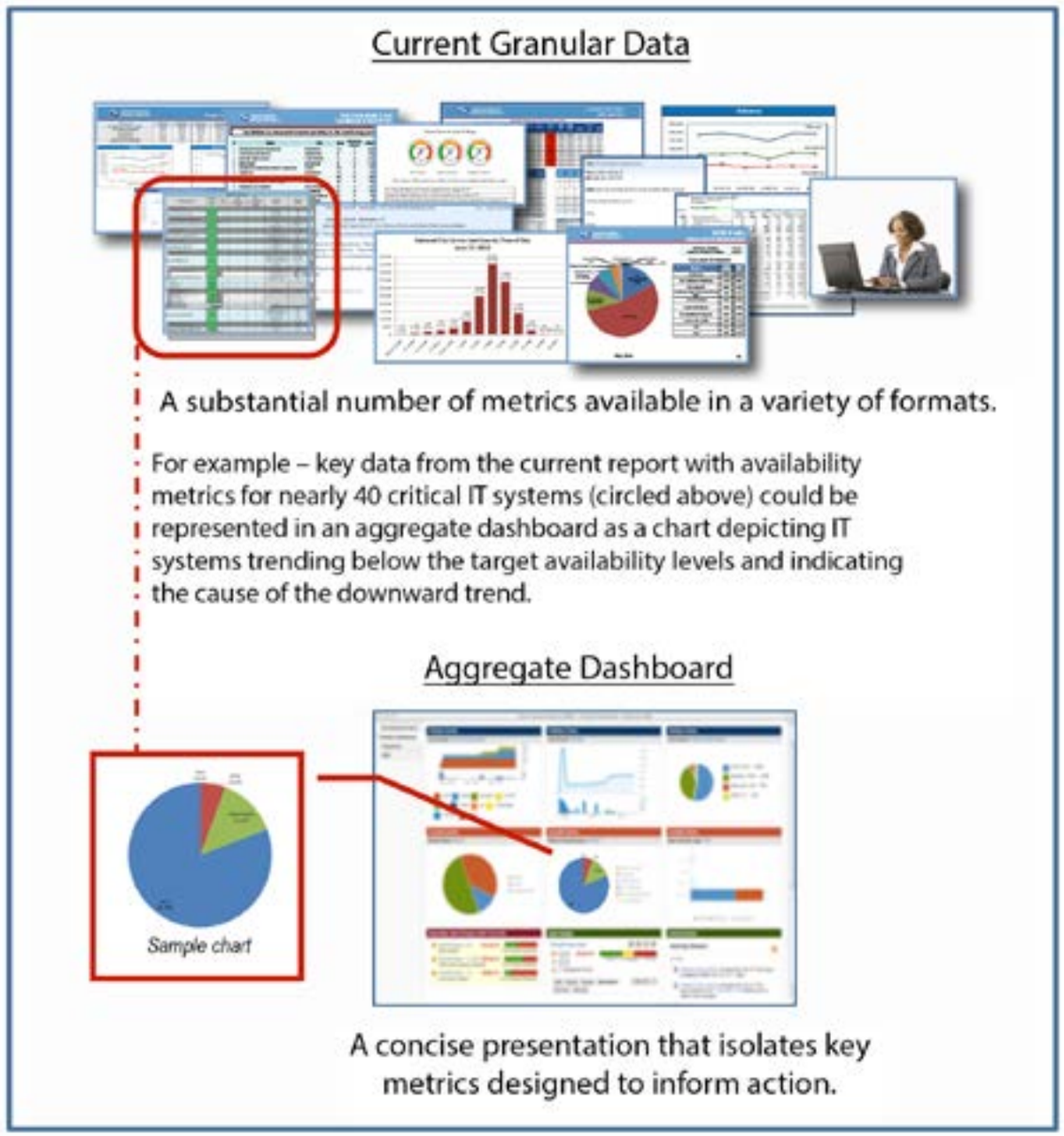
Clear All

5 The time that a computer is operational.
6 Fuel gauge graphics are essentially like the speedometer or fuel gauge of a car. They use a radial scale to display the data range and a dial to indicate the data value. Colors can be selected for the data range, such as green for satisfactory, yellow for caution, and red for alarm.
7 Malicious software or any program or file that is harmful to a computer user.
8 The Postal Service measures service performance in terms of speed and reliability of delivery for each class of mail and type of service offered.

We found that the CIO's data utilization practices generally reflect industry best practices. For example, they include attention to metrics from across each of the six CIO-level best practice categories,[9] metrics that reflect the key strategic initiatives sponsored by the CIO, and close consideration of how senior management uses the data metrics provided by the CIO. However, given the volume of data reviewed, the CIO could increase business value by viewing aggregated data that is more actionable, easier to comprehend, and more visually compelling.

Figure 1 provides a sample illustration of transitioning from granular metrics spread across various reports to an aggregate dashboard that isolates key metrics and enables the CIO to use data more effectively.

Figure 1. Transition from Granular to Aggregate



Source: OIG analysis.

9 The CEB-defined CIO-level best practice categories are financial, project, operational, talent management, user satisfaction, and information security.

For metrics to be useful to an organization, they must be driven by the organization's business strategies. A CIO-level tool with an aggregate dashboard design could, for example, incorporate key metrics on the progress of the CIO's DRIVE initiatives and primary risks, along with highly relevant metrics from the main initiatives of the CIO's vice presidents. This is an opportunity for the CIO to create an aggregate-level dashboard that encompasses the areas of financial performance, project performance, operational performance, talent management, user satisfaction, and information security. Such a tool should be designed to draw attention to anomalies and key issues in a way that informs necessary actions and includes drill-down capability for more granular data when necessary. A concise display of key diagnostic and predictive metrics from across the CIO's strategic operations would provide clarity and focus to support innovative decision making.

The CIO currently has projects underway to enhance the collection and mining of internal data, introduce operational intelligence tools,[10] and expand the infrastructure for storing and processing substantial volumes of data. As part of a data analytics plan, these projects should advance predictive and proactive metrics for senior management. Currently, the CIO's efforts are focused on integrating data from various Postal Service areas to collect and create the right metrics. The CIO agreed with the need for a CIO-level dashboard when we met with him during the course of our audit.

10 The product Splunk is an example of an operational intelligence tool that is used with data provided by applications, servers, and network devices.

Recommendation

We recommend management implement an aggregated dashboard of key composite metrics that represent strategic goals, risks, anomalies, and key issues requiring management action.

We recommend the chief information officer and executive vice president:

1. Implement an aggregated dashboard of key composite metrics that represent the chief information officer's strategic goals and risks while highlighting anomalies and key issues requiring management action.

Management's Comments

Management agreed with our finding and recommendation during a meeting on February 18, 2015. Management stated the target date for implementation of an aggregated dashboard is fiscal year (FY) 2015, Quarter 3.

Evaluation of Management's Comments

The OIG considers management's comments responsive to the recommendation.

Appendix

Click on the appendix title to the right to navigate to the section content.

Appendix A: Additional Information

Background

In FY 2014, the OIG initiated an agency-wide series of audits to review the Postal Service's use of data. These audits included discussions about data use by the deputy postmaster general and executive vice presidents. This audit focuses on the CIO who oversees the integration of technology and innovation in all aspects of Postal Service operations. The CIO directs the advancement of mail entry and payment technology, engineering systems, IT, product information, and corporate information security.

Like any organization, the Postal Service depends on data to manage its business strategies and daily activities. However, as a large organization, the Postal Service collects vast amounts of data, which can be challenging to manage due to the volume, velocity (the speed of collection and dissemination), variety of sources, and veracity of the data. Behavioral research has concluded that simply providing more data to decision makers can harm good decision making. Effective metrics are precise, clearly defined, actionable, and relevant to the stakeholder.

In order for data to be useful, senior management must have an effective aggregated view with the ability to drill down to granular-level details to dismantle and isolate components when necessary. The attributes of an effective dashboard include alignment with the organization's strategic plan, metrics with established targets and defined performance thresholds, simplicity in presentation that draws attention to anomalies and key issues, and content that informs necessary actions and improvements.

Objective, Scope, and Methodology

Our primary objective was to determine whether the Postal Service's CIO effectively uses internal and external business data to manage business activities and mitigate risk. Our sub-objectives were to determine whether the CIO:

- Has sufficient data analysis tools available.
- Could use underutilized, yet available, internal or external data to improve operations.
- Could acquire useful data, currently unavailable to Postal Service employees, to improve operations.
- Is proactively identifying sources of internal data or performing data mining to support oversight functions.
- Has encountered restrictions on access to internal data that hinder efficient operations.

The scope of this audit was the data analytics practices of the office of the CIO and associated vice presidents. To meet our objectives, we:

- Discussed utilization of internal and external data with the CIO and vice presidents of Engineering Systems, IT, Mail Entry and Payment Technology, and Product Information.
- Collected and evaluated examples of the reports and metrics interviewees identified as significant in managing their daily operations.

- Analyzed the type of metrics and general presentation of the data for the CIO in contrast to best practices for CIOs across industries.

- Discussed the results of our analysis with an external research organization[11] that concurred with our approach and conclusions.

We conducted this performance audit from May 2014 through March 2015, in accordance with generally accepted government auditing standards and included such tests of internal controls as we considered necessary under the circumstances. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our finding and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our finding and conclusions based on our audit objectives. We discussed our observations and conclusions with management on February 18, 2015, and included their comments where appropriate.

We did not assess the reliability of any computer-generated data for the purposes of this report.

Prior Audit Coverage

Report Title	Report Number	Final Report Date	Monetary Impact
U.S. Postal Service Data Governance	DP-AR-13-004(R)	4/23/2013	None
Report Results: Our report found that the Postal Service could improve management of critical data to help managers and employees achieve strategic and operational goals. We identified 148 data-related issues in OIG reports issued during FYs 2009 through 2012. Although the Postal Service defined a structure for a data governance program in 2003, full roles and responsibilities were not uniformly adopted across the enterprise. We identified the best practices of companies with successful data governance programs. Management agreed with the finding and, subsequent to their formal response, the recommendation in the report. Management incorporated a data governance program under the DRIVE Initiative 19, *Business Innovation Through IT*.			

11 CEB.

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